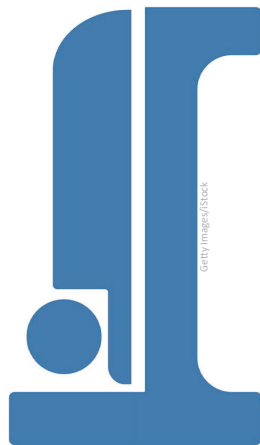


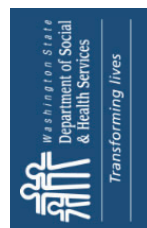
Forecasts of Forensic and Civil Bed Need for Eastern and Western State Hospitals



David Mancuso, PhD

Director, DSHS Research and Data Analysis Division

JUNE 2023



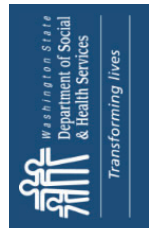
DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

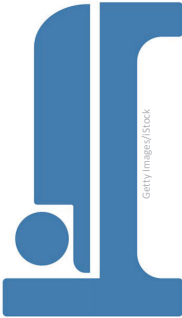
Background

Budget proviso language directs DSHS to maintain a model to forecast demand for forensic and civil state hospital beds, incorporating factors such as:

- The capacity in state hospitals as well as contracted facilities which provide similar levels of care,
- Referral patterns,
- Lengths of stay,
- Wait lists, and
- Other factors (e.g., capacity utilization rates) identified as appropriate for predicting the number of beds needed to meet the demand for civil and forensic state hospital services.

Factors should include identification of need for the services and analysis of the effect of community investments in behavioral health services and other types of beds that may reduce the need for long-term civil commitment needs.





PART 1

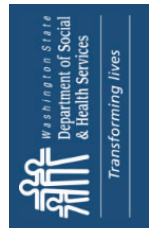
Forensic Bed Need Forecast



DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

Forensic Model Context

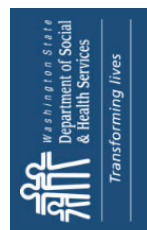
- The state hospitals provide forensic inpatient competency evaluation services when a court believes a mental disability may prevent a criminal defendant from assisting in their defense. Most competency evaluation services are provided in jail or community settings.
- Inpatient treatment for competency restoration is provided when the evaluation finds the defendant is not competent and outpatient competency restoration is either not available or not sufficient to meet the need.
- In April 2015, a federal court found in the case of Trueblood v. DSHS (Trueblood) that the Department was taking too long to provide competency evaluation and restoration services, in part due to a shortage of beds for the provision of inpatient restoration services.
- As a result of the Trueblood case, the State was directed to provide court-ordered competency evaluations within 14 days and competency restoration services within 7 days.



DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

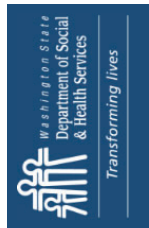
Forensic Model Context

- Relative to other program areas for which the Caseload Forecast Council (CFC) provides official budget forecasts, forensic bed need forecasts:
 - Are based on small numbers with more variable monthly counts of new episodes and will be inherently less stable across forecast cycles
 - Are subject to a rapidly evolving policy and service environment
 - Are significantly impacted by factors outside the control of the agency responsible for providing the service (e.g., the roles of law enforcement and prosecutorial and judicial discretion have no close analog in the forecasting of medical, food, or cash assistance caseloads)
 - Are needed to inform a longer-term facility planning horizon than is generally required of entitlement program caseload forecasts
- These factors result in the need for long-term forecasts of forensic bed need with greater intrinsic uncertainty relative to CFC forecasted programs
- The COVID-19 pandemic had a significant impact on forensic referral trends, particularly in the 6-month period beginning March 2020. Looking forward, distinguishing between the unwinding of COVID-era referral backlogs and secular referral growth remains a challenge.



Episode-Based Forensic Forecast: non-NGRI New Episode Trends

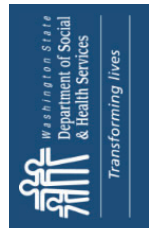
- Link forensic orders into “episodes” based on court order and cause numbers
- Identify episodes where there is at least one inpatient (IP) order, including inpatient orders associated with persons in a community setting (e.g., PR)
- Attribute an episode to a legal authority group (LAG) based on the first IP order in the episode
- For monthly “new episode” trending purposes, attribute an episode “begin date” to the date of the first IP order in the episode
- Use exponential smoothing to forecast monthly new episode counts
- Current forecast is based on monthly new episodes spanning August 2018 to March 2023



DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

Episode-Based Forensic Forecast: non-NGRI Length of Stay

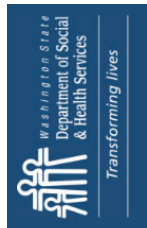
- Measure length of stay (LOS) among episodes resulting in an IP admission, counting all IP days within the episode (i.e., including non-contiguous IP stays that might occur within a single episode)
- Calculate mean LOS by hospital and LAG based on admission cohorts spanning 8/2018 – 12/2020
- Assume that episodes with an IP order that **do not** result in an IP admission require the average LOS associated with episodes that **do** result in an IP admission
- Calculate weighted average LOS using the case mix of new episodes in the most recent 12 months of data (4/2022 – 3/2023 for the current forecast)



DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

Episode-Based Forensic Forecast: Additional Methods and Assumptions

- “Core” forensic forecast excludes beds needed to clear current wait list
- Non-NGRI capacity utilization: 85%
- NGRI Forecast
 - Project NGRI census to remain constant at last observed actual value
 - Assume 90% capacity utilization
- WSH/ESH Bed Need Detail
 - Decompose statewide non-NGRI bed need based on the relative WSH/ESH share of new episodes over most recent 12 months of actuals, adjusted by relative LOS
 - Decompose NGRI bed need based on the relative WSH/ESH share of NGRI patients as of the last observed actual values



DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

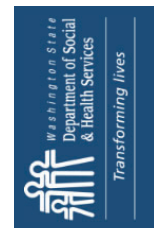
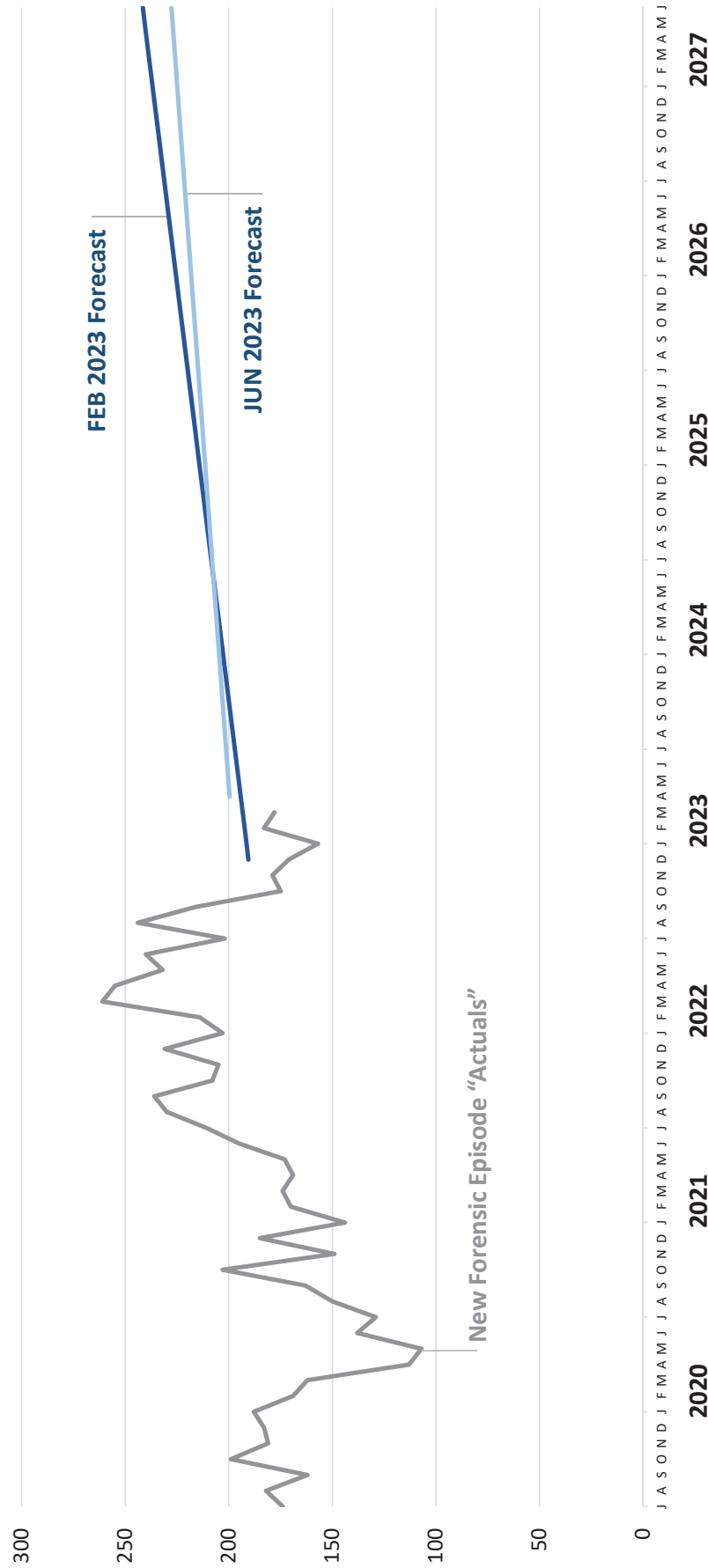
Time-Limited Beds Needed to Clear Wait List: Methods and Assumptions

- Wait list includes person in jail or in the community (e.g., on personal recognizance or under house arrest)
- New episode-based LOS averages (by LAG by hospital) are applied to the wait list composition as of most recent snapshot point in time. Wait-list estimates prior to February 2023 forecast applied order-based LOS averages.



DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

Statewide New Forensic Episode Forecast



SOURCE: DSHS Research and Data Analysis.

DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

Episode Length of Stay by Attributed Legal Authority Group

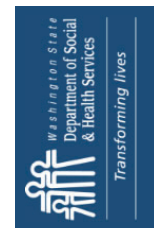
8/2018 – 12/2020 Admission Cohorts

	Mean LOS (Days) by Legal Authority Group							
Region	Dismissal Evaluation	Felony Restoration 90/180 Days	Felony Restoration 45 Days	Misdemeanor Evaluation	Misdemeanor Restoration	Felony Evaluation	Weighted Average	
WSH	48.1	144.8	95.8	29.8	33.3	97.9	100.8	
ESH	21.6	107.7	70.3	47.2	36.2	59.5	66.3	
Statewide							90.8	

Note: Forensic episodes are attributed to a legal authority group based on the initial inpatient order associated with the episode.

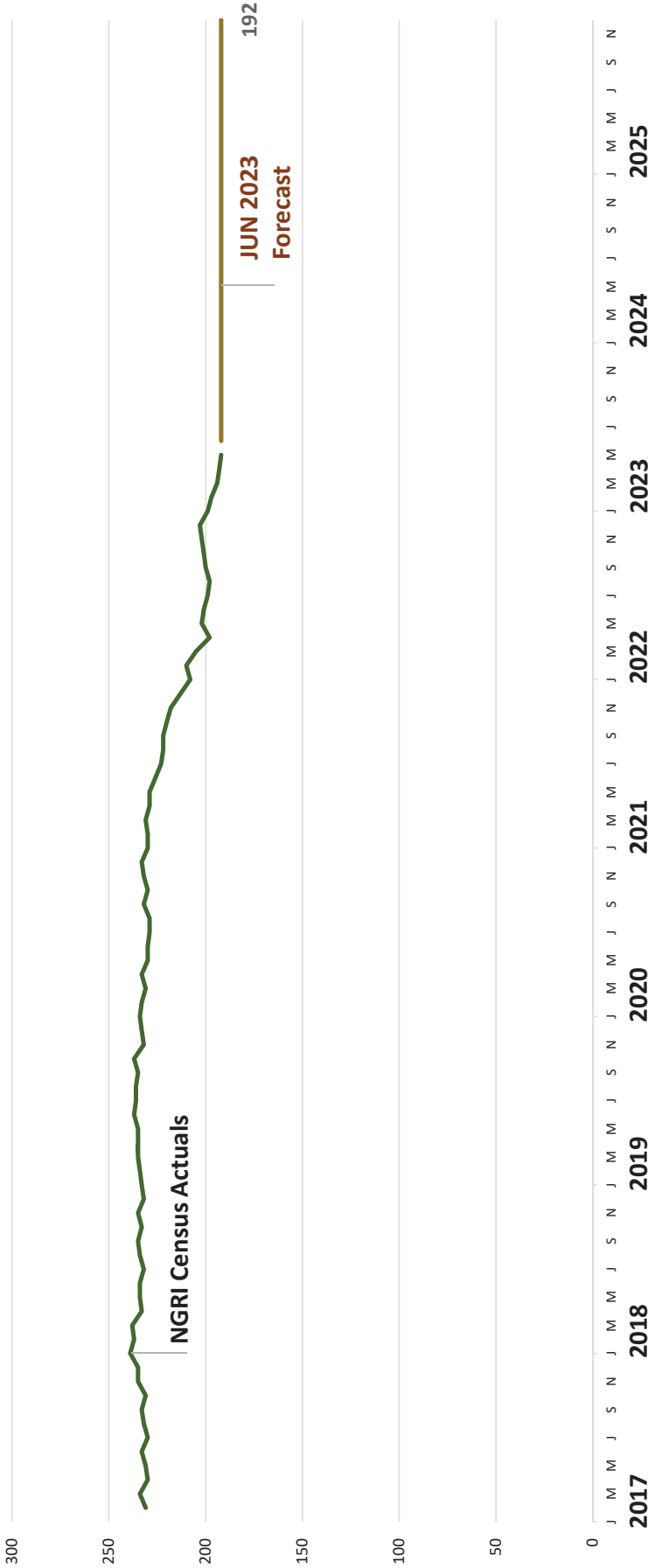
SOURCE: DSHS Research and Data Analysis.

DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023



Statewide NGRI Patient Census Forecast

Combined Eastern and Western State Hospitals
FEB 2023 Forecast Maintained at Last Actual



SOURCE: DSHS Research and Data Analysis.

DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

Forensic Bed Need Forecast Summary

February 2023 Forensic Bed Need Forecast by State Fiscal Year (SFY)

	Western State			Eastern State		
	Forecast Need Year End	Forecast Need SFY Average	Funded Beds Year End	Forecast Need Year End	Forecast Need SFY Average	Funded Beds Year End
2023	729		488*	190		175
2024	748	739	518*	194	192	
2025	768	759		198	196	
2026	788	779		201	200	
2027	808	799		205	203	

*WSH funded bed count includes 60 RTF beds through SFY 2023, expanding to 90 RTF beds in SFY 2024.
Funded bed count does not reflect capacity associated with the new forensic hospital scheduled to open in SFY 2028 on the grounds of WSH.
Forecast excludes time-limited bed capacity needed to clear existing wait lists for inpatient forensic services.

SOURCE: DSHS Research and Data Analysis.

DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023



Statewide Forensic Forecast: Comparison with Prior Forecast

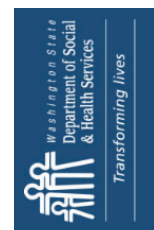
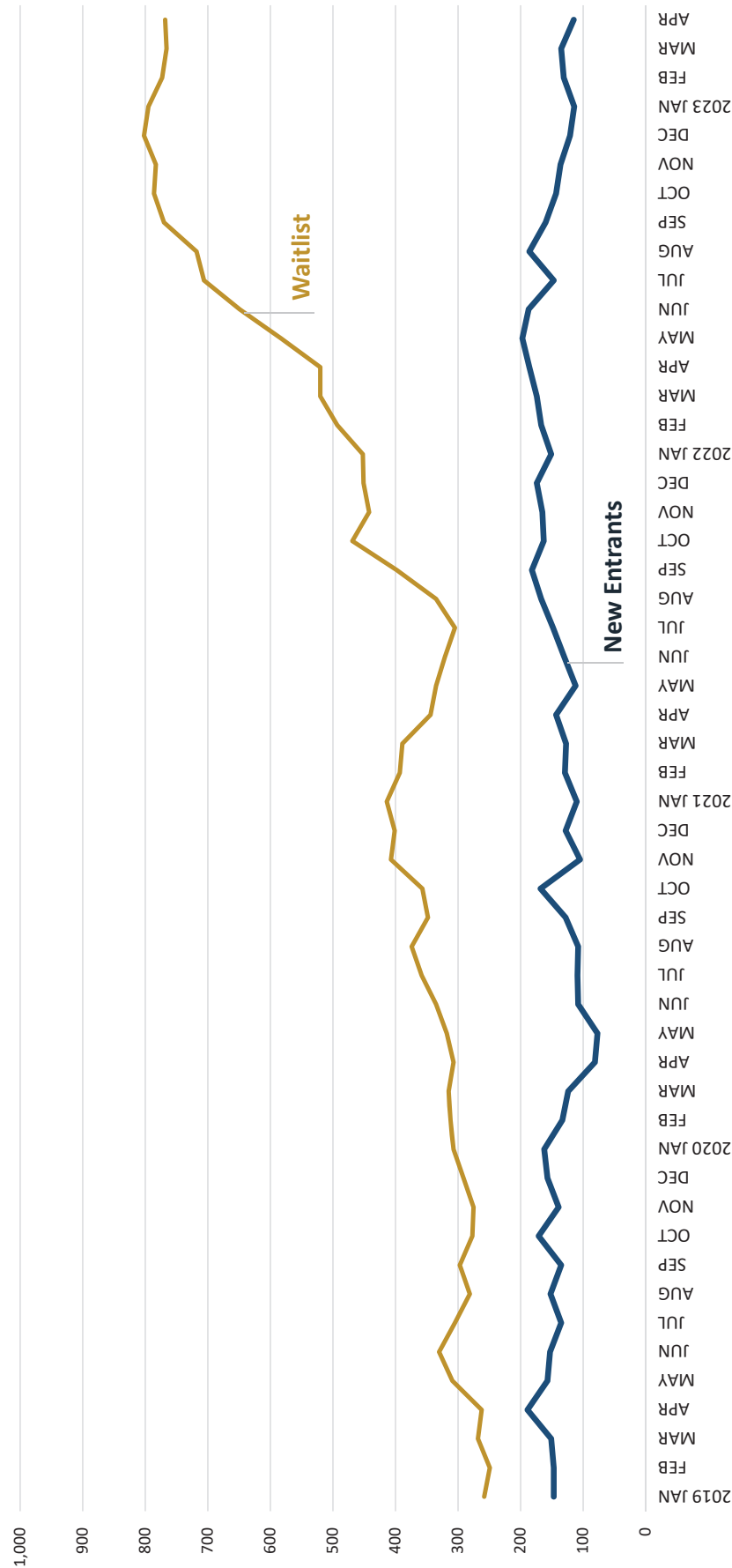
	FORENSIC		
	JUN 2023 Forecast SFY Year End	FEB 2023 Forecast SFY Year End	Change*
2023	919	891	28
2024	942	930	13
2025	966	968	-2
2026	990	1,007	-18
2027	1,013	1,046	-33



*Change might differ by +/- 1 from the raw difference between current and prior forecast values due to rounding.
Forensic forecast excludes time-limited bed capacity needed to clear existing wait lists for inpatient forensic services.

DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

Statewide Forensic Wait List



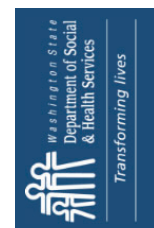
SOURCE: DSHS Research and Data Analysis.

DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

Additional Forensic Bed Capacity Needed to Clear Western State Hospital and RTF Wait Lists

Western State Hospital and RTF					
	Legal Authority Group				
	A	B	C	D	E
TOTAL					
Wait List	267	282	5	98	9
Average Length of Stay (Days)	130.4*	95.8	29.8	33.3	97.9
Utilization Rate	85%	85%	85%	85%	85%
Bed Days	40,976	31,785	178	3,844	1,037
<i>Additional beds needed to clear wait list in 12 months:</i>					213

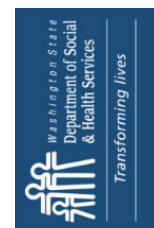
* Weighted average of LOS for Dismissal Evaluation and 90/180 Felony Restoration legal authority groups
Includes persons waiting in jail or in the community
Wait Lists as of May 10, 2023
DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

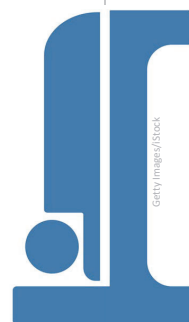


Additional Forensic Bed Capacity Needed to Clear Eastern State Hospital Wait Lists

Eastern State Hospital					
	Legal Authority Group				
	A	B	C	D	E
Wait List	36	52	6	14	11
Average Length of Stay (Days)	69.9*	70.3	47.2	36.2	59.5
Utilization Rate	85%	85%	85%	85%	85%
Bed Days	2,961	4,303	333	596	770
<i>Additional beds needed to clear wait list in 12 months:</i>					25

* Weighted average of LOS for Dismissal Evaluation and 90/180 Felony Restoration legal authority groups
Includes persons waiting in jail or in the community
Wait Lists as of May 10, 2023
DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023





PART 2

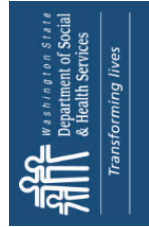
Civil Bed Need Forecast



DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

In-Scope Patients and Settings for Defining Civil Bed Need

- **In Scope**
 - **Civil Conversion Patients**
 - ✓ Primarily served in State Hospital settings
 - ✓ Patients beginning to be served in community settings, with numbers expected to increase over time in both HCA-contracted and DSHS facility settings
 - **Non-Civil-Conversion Civil Patients**
 - ✓ State Hospital settings
 - ✓ HCA-contracted long-term civil commitment (HCA LTCC) settings
 - ✓ Persons on 90/180-day civil orders in “Other Acute Hospital” settings
- **Out of scope:**
 - Persons on 90/180-day civil orders in an E&T outside of an HCA-contracted LTCC setting
 - Persons on 90/180-day civil orders in a Community Psychiatric Hospital (CH) outside of an HCA-contracted LTCC setting



DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

Important Note Regarding Change in Accounting Methods for Patients in HCA Community Settings Outside of HCA-Contracted LTCC Beds

- **Prior Method:** The February 2023 Forecast counted all persons on 90/180-day civil orders in HCA community settings outside of HCA-Contracted LTCC Beds towards bed need, and counted beds associated with persons in E&T and Community Psychiatric Hospital settings towards bed capacity
- **Current Method:** The June 2023 Forecast counts only persons in acute hospital settings towards bed need and does not count beds associated with persons in E&T and Community Psychiatric Hospital settings towards bed capacity.
- The two approaches provide identical forecasts of the net balance between civil bed need and bed capacity.



Operating Budget Civil Bed Assumptions Using Option 1 to Account for E&T/CH Non-Contracted Bed Use

SFY	2020	2021	2022	2023	2024	2025	2026	2027
WSH	467	437	347	287	287	287	287	287
ESH	192	192	192	192	192	192	192	192
HCA-Contracted Long-Term Civil Commitment (LTCC)	119	167	180	267	300	316	316	316
University of Washington	0	0	0	0	0	75	75	75
Maple Lane Campus Civil Expansion	0	0	0	16	16	80	80	80
Tulalip Tribal E&T	0	0	0	0	0	16	16	16
Vancouver – Brockman Campus (48 Beds Prioritized for Civil Conversions)	0	0	0	0	0	48	48	48
TOTAL PLANNED BEDS AT END OF SFY				762	795	1,014	1,014	1,014
CIVIL BED NEED FORECAST AT END OF SFY				808	845	881	918	955

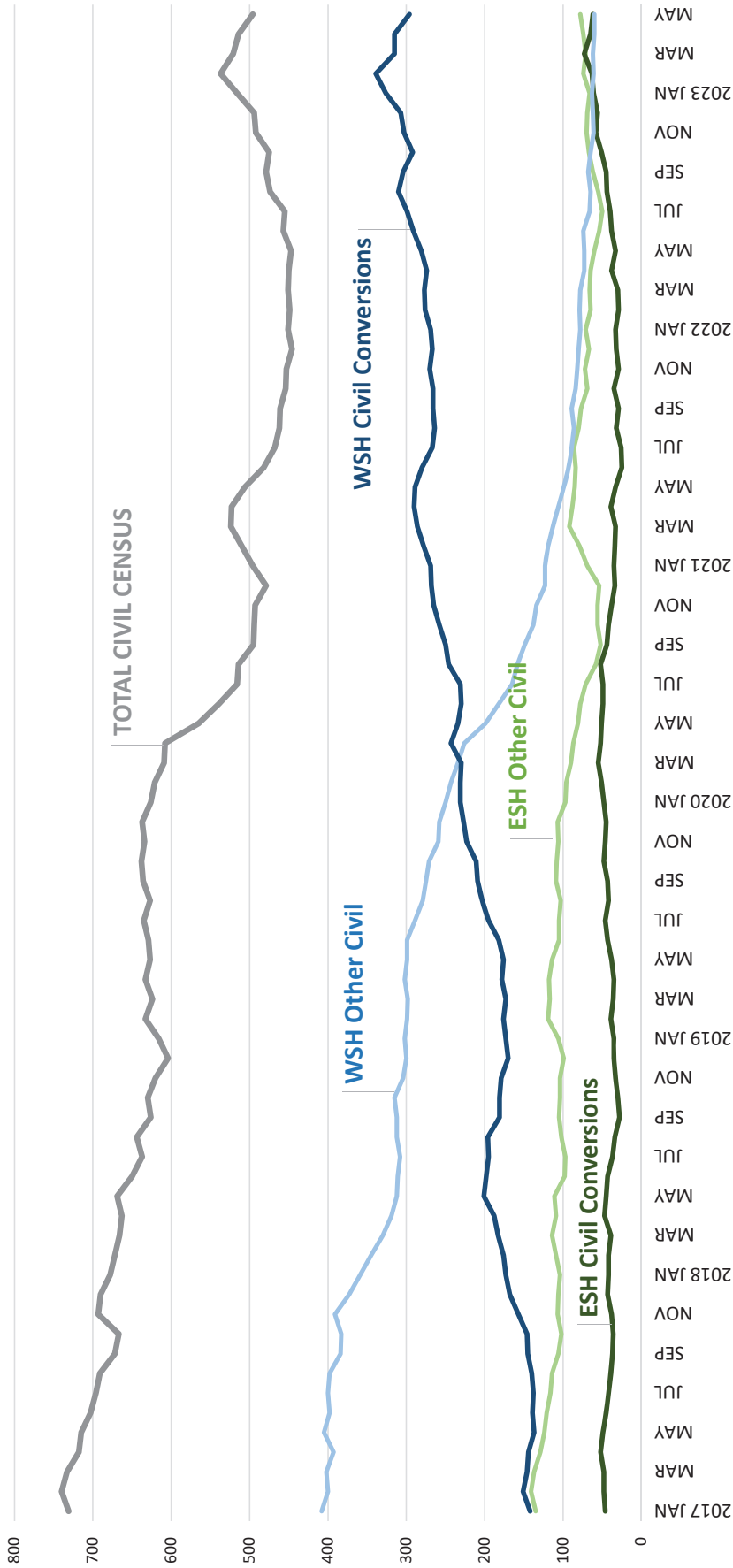
NOTES: 1. Overall planned/needed bed balance may mask imbalances across patient types (e.g., civil conversion relative to non civil conversion)
2. 224 HCA-contracted LTCC beds were online as of 5/15/2023, of which 65 are flex beds.



DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

State Hospital Civil Census Trends

First-of-month snapshot from 1/1/2017 through 5/1/2023

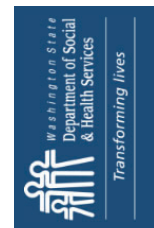
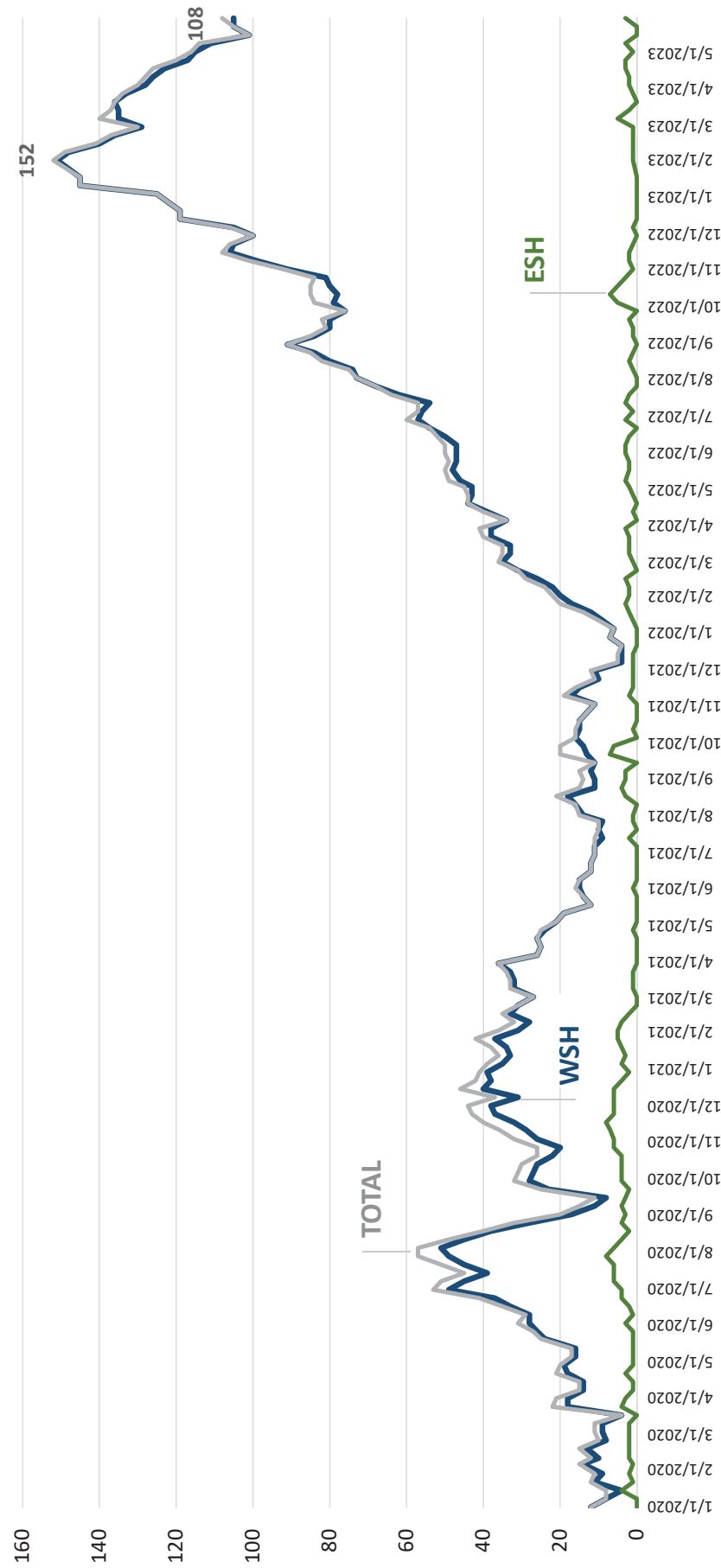


SOURCE: DSHS Research and Data Analysis.

NOTES: Civil Census counts include in-residence patients. Excludes patients released on Authorized Leave or Medical Discharge. Civil Conversions are the number of in-residence civil patients who were converted from a forensic to a civil legal authority.

DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

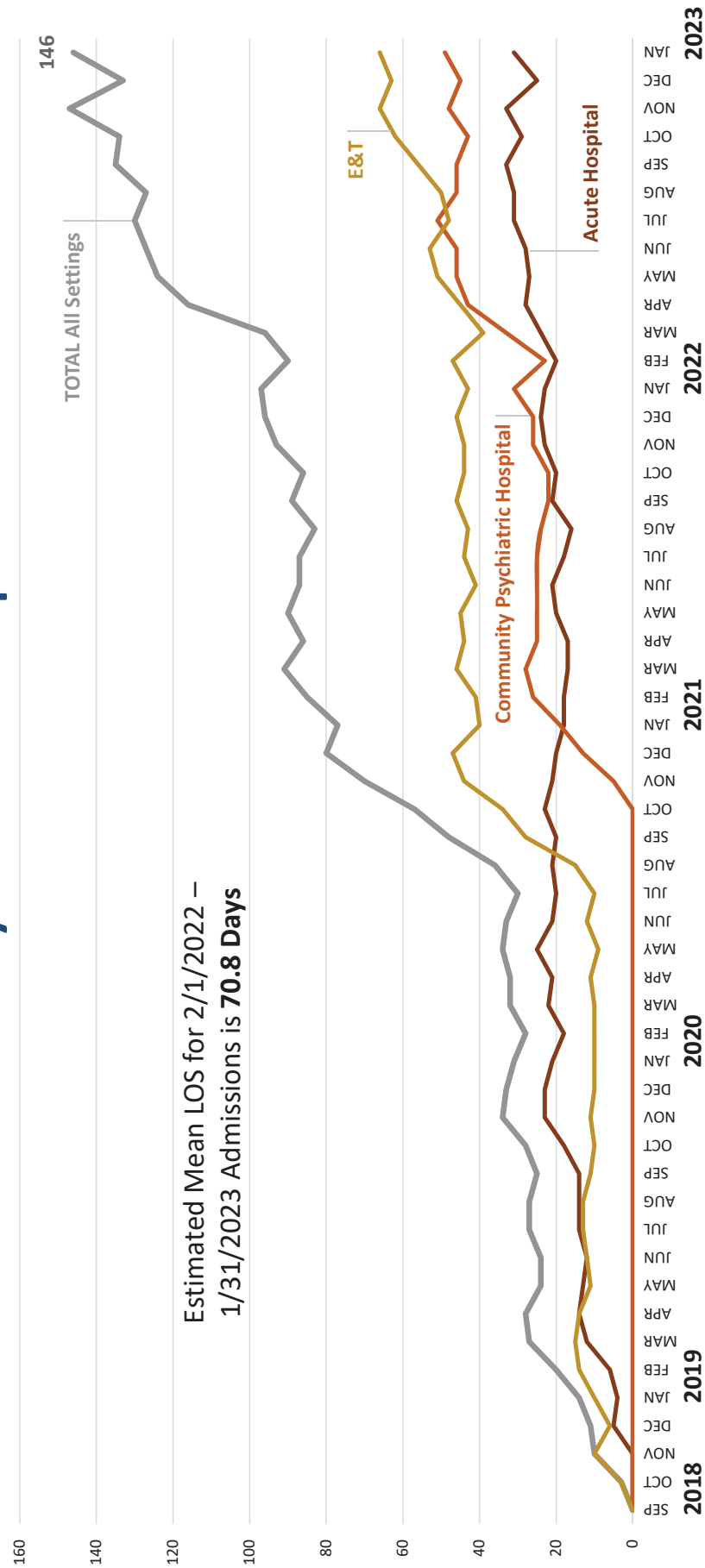
Civil Conversion Patients on Forensic Wards



SOURCE: DSHS Research and Data Analysis.

DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

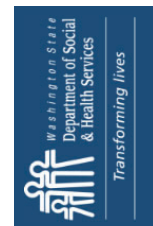
HCA-Contracted LTCC Daily Census First Day of Month Snapshot



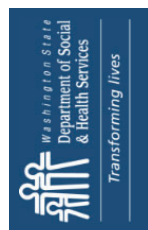
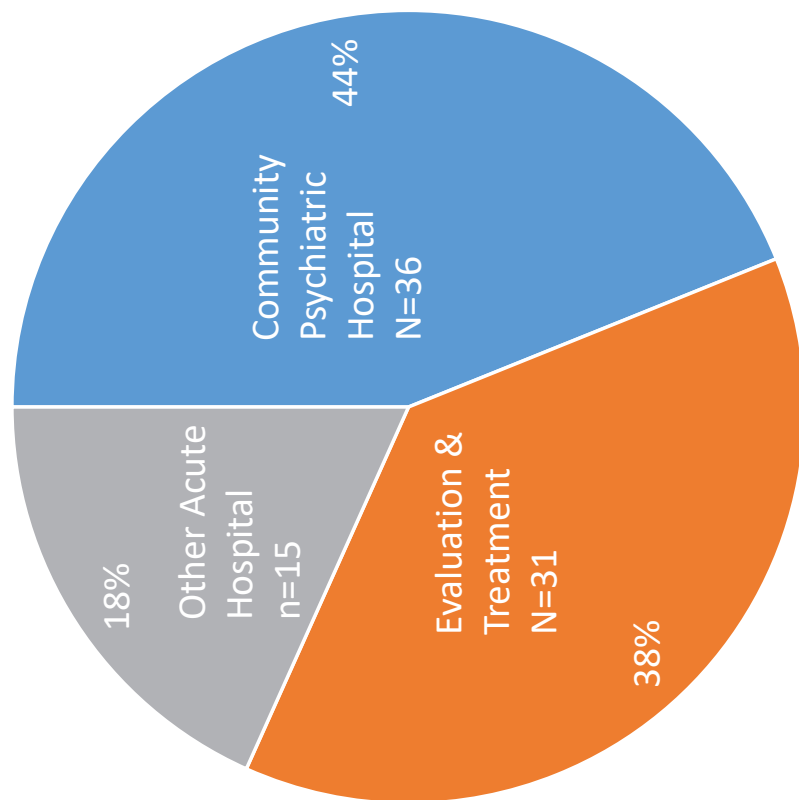
SOURCE: DSHS Research and Data Analysis.

NOTES: Based on admit and discharge dates for completed episodes and imputation from authorization data for admissions that have not yet discharged.

DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023



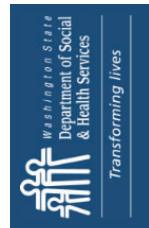
Persons in the community on a 90-/180-day civil commitment as of 6/1/2023 and not in an HCA-contracted LTCC bed



DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

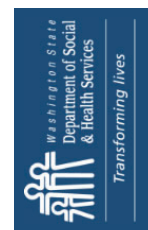
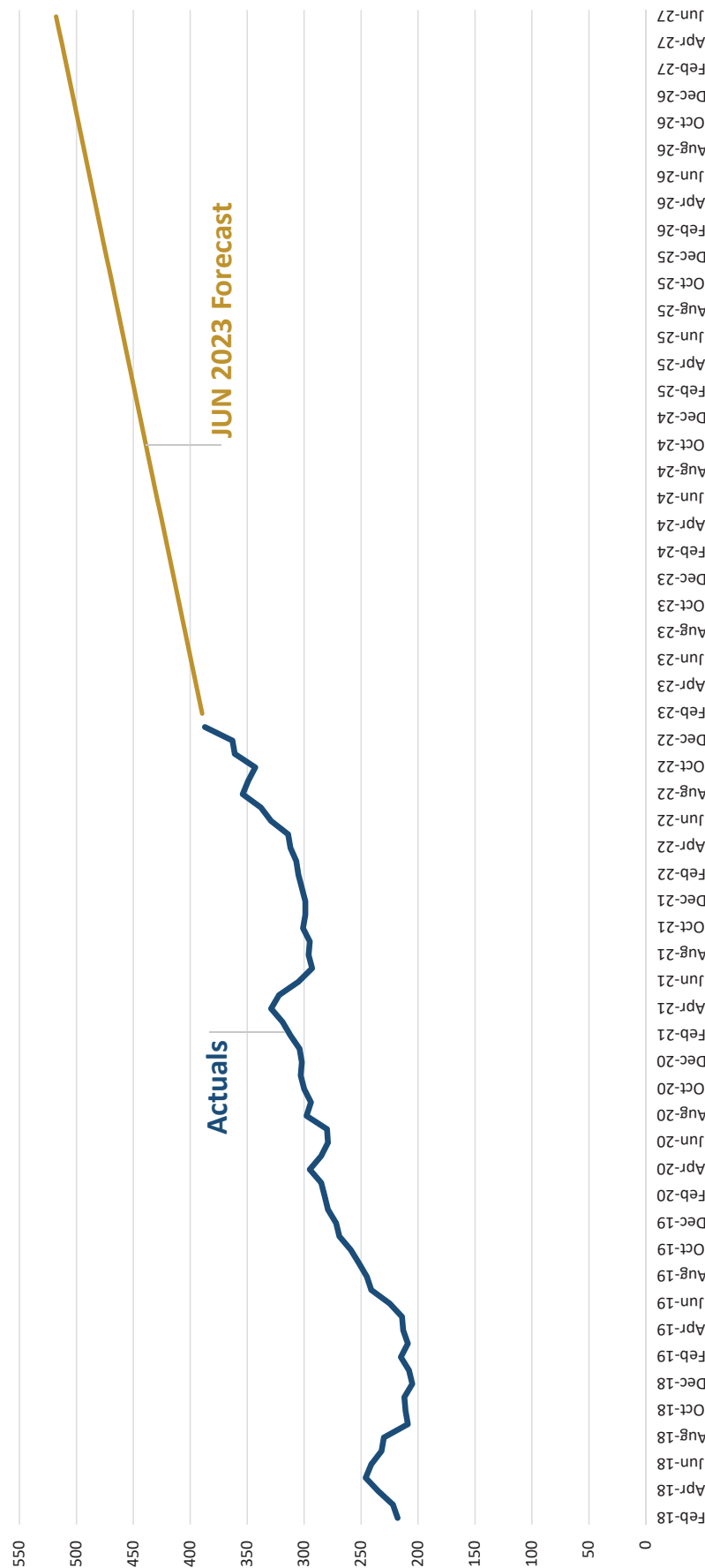
Civil Bed Need Forecast Model

- **Civil Conversion Bed Need**
 - Exponential smoothing model applied to most recent **60** months of first-of-month daily census counts though the “last actual” data point (January 1, 2023)
 - 85 percent occupancy assumption
- **Non-Civil-Conversion Bed Need**
 - Developing time series of daily census counts across 3 setting types:
 - ESH/WSH “other civil”
 - HCA-contracted LTCC
 - Patients on 90/180-day civil orders in an acute hospital setting and not in an HCA-contracted LTCC bed
 - Until enough history is available to consider time series models, apply an annual growth factors based on the OFM State Population Forecast for adults aged 18-64
 - 85 percent occupancy assumption is used to translate patient census into bed need



DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

State Hospital Civil Conversion Statewide Daily Census Forecast

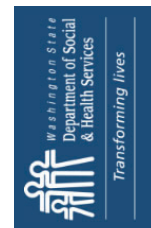


SOURCE: DSHS Research and Data Analysis.

DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

Non-Civil-Conversion Daily Census (OPTION 1)

Available Measurement Points for Calculating Non-Civil-Conversion Bed Need					
Date	WSH/ESH Other Civil	HCA Other LTCC	HCA Other LTCC Acute Hosp	HCA Contracted LTCC Bed	
11/1/2022	131			147	
12/1/2022	131	92	24	133	
1/1/2023	129	91	12	146	
2/1/2023	135	96	14		
3/1/2023	133	97	20		
4/1/2023	134	101	21		
5/1/2023	138	81	20		
6/1/2023		82	15		



SOURCE: DSHS Research and Data Analysis.

DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

Statewide Civil Bed Need Forecast Summary (Option 1)

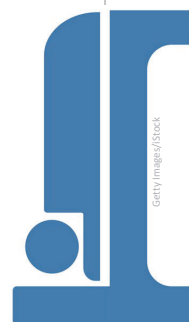
June 2023 Civil Bed Need Forecast by State Fiscal Year (SFY)

	Statewide Forecast Civil Bed Need		
	Civil Conversion Bed Need SFY Year End	Other Civil* Bed Need SFY Year End	Total Civil Bed Need SFY Year End
2023	470	338	808
2024	505	340	845
2025	539	342	881
2026	574	344	918
2027	609	346	955

* Includes persons on 90/180-day civil commitments in State Hospital settings, in HCA-contracted facilities providing community-based long-term civil commitment services, and persons on 90/180-day orders in other acute hospital settings (excluding E&T and community psychiatric hospital settings).

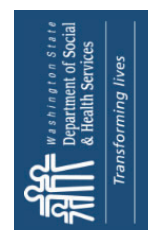
DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023





PART 3

Comparisons with Prior Forecast



DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023

Forensic and Civil Bed Need Forecasts: Comparison with Prior Forecasts

	FORENSIC			CIVIL (OPTION 1)		
	JUN 2023 Forecast SFY Year End	FEB 2023 Forecast SFY Year End	Change*	JUN 2023 Forecast SFY Year End	FEB 2023 Forecast SFY Year End	Change*
2023	919	891	28	808	848	-40
2024	942	930	13	845	886	-41
2025	966	968	-2	881	924	-43
2026	990	1,007	-18	918	963	-45
2027	1,013	1,046	-33	955	1,001	-46



*Change might differ by +/- 1 from the raw difference between current and prior forecast values due to rounding.
Forensic forecast excludes time-limited bed capacity needed to clear existing wait lists for inpatient forensic services.

DSHS | Facilities, Finance, and Analytics Administration | Research and Data Analysis Division • JUNE 2023